

Chapter 11 Test

Name: _____ Date: _____

Directions: Write the correct letter on the blank before each question.

Objective 1:

Identify components of public water supply systems.

Objective 2:

Identify characteristics of private water supply systems.

- _____ 1. What entity is usually responsible for public water supply systems? (466)
- A. Fire department
 - B. Local government
 - C. Private contractor
 - D. Federal government
- _____ 2. Who is responsible for the inspection, testing, and maintenance of private water supply systems? (466)
- A. Local government
 - B. State government
 - C. Private contractor
 - D. Facility owners/occupants
- _____ 3. Which basic water supply system component includes lakes, reservoirs, and ponds? (466)
- A. Water sources
 - B. Pressure tanks
 - C. Storage systems
 - D. Treatment facilities

- _____ 4. The basic water supply system component that includes water pumps is: (466)
- A. water sources.
 - B. treatment facilities.
 - C. distribution systems.
 - D. means of moving water.
- _____ 5. Water distribution and storage systems include: (466)
- A. water pumps.
 - B. wells and springs.
 - C. purification and desalination plants.
 - D. storage tanks, control valves, piping systems, and hydrants.
- _____ 6. The BEST method for evaluating the capabilities of a water supply system is: (467)
- A. photographs.
 - B. an in-person inspection.
 - C. reviewing documentation.
 - D. interviewing the property owner.
- _____ 7. A ____ may be an open lake or pond or an enclosed structure. (469)
- A. reservoir
 - B. gravity tank
 - C. suction tank
 - D. pressure tank
- _____ 8. Which tanks are located at ground level and provide a water supply source for fire pumps? (469)
- A. Gravity tanks
 - B. Suction tanks
 - C. Pressure tanks
 - D. Elevated tanks
- _____ 9. Which tanks are used to stabilize or balance the pressures on distribution systems at times of peak demand? (470)
- A. Gravity tanks
 - B. Suction tanks
 - C. Pressure tanks
 - D. Negative pressure tanks

- _____ 10. Which problem is the MOST important when it comes to elevated tanks? (470)
- A. Open valves
 - B. Tanks with low levels
 - C. Expensive and intensive maintenance
 - D. Limitation of pressure available from the tanks
- _____ 11. A ____ delivers water from the source to the distribution system without pumping equipment. (470)
- A. gravity system
 - B. suction system
 - C. combination system
 - D. direct pumping system
- _____ 12. The system for moving water by installing pumps in the distribution system when elevation pressure cannot provide sufficient pressure is a: (470)
- A. gravity system.
 - B. suction system.
 - C. combination system.
 - D. direct pumping system.
- _____ 13. The interlocking network of water mains that compose a water distribution system is referred to as a: (472)
- A. grid system.
 - B. loop system.
 - C. hydrant framework.
 - D. distribution network.
- _____ 14. Water mains that convey large quantities of water to various points are: (472)
- A. distributors.
 - B. primary feeders.
 - C. back-up feeders.
 - D. secondary feeders.
- _____ 15. Which water main includes intermediate pipes that interconnect with primary feeders to create a grid? (472)
- A. Distributors
 - B. Primary feeders
 - C. Back-up feeders
 - D. Secondary feeders

- _____ 16. Small water mains that serve individual fire hydrants are: (473)
- A. distributors.
 - B. primary feeders.
 - C. back-up feeders.
 - D. secondary feeders.
- _____ 17. Storage tanks located throughout a water distribution system are usually constructed of: (474)
- A. copper or PVC.
 - B. concrete or steel.
 - C. glass or aluminum.
 - D. plastic or fiber glass.
- _____ 18. Why do workers close control valves? (474)
- A. To initiate repairs
 - B. To prevent injuries
 - C. To assist firefighters
 - D. Control valves should never be closed
- _____ 19. How often should control valves be exercised? (474)
- A. At least once a week
 - B. At least once a month
 - C. At least once a year
 - D. At least every five years
- _____ 20. Valves in water systems are usually the ____ type and located underground. (474)
- A. indicating
 - B. alarm test
 - C. nonindicating
 - D. automatic drain
- _____ 21. Which type of control valve usually has a rubber or rubber-composition seat that is bonded to the valve body? (474)
- A. Gate valve
 - B. Butterfly valve
 - C. Alarm test valve
 - D. Non-rising stem valve

- _____ 22. Which type of hydrant is designed for use in climates that have freezing temperatures? (476)
- A. Dry-barrel
 - B. Wet-barrel
 - C. Standpipes
 - D. Water wells
- _____ 23. Hydrant discharge outlets are considered *standard* if they contain: (477)
- A. one large (4- or 4½-inch [100 mm or 115 mm]) outlet.
 - B. two hose outlet nozzles for 2½-inch (65 mm) couplings.
 - C. one large (4- or 4½-inch [100 mm or 115 mm]) outlet and two hose outlet nozzles for 2½-inch (65 mm) couplings.
 - D. one small hose outlet nozzle for 2½-inch (65 mm) couplings and two large (4- or 4½-inch [100 mm or 115 mm]) outlets.
- _____ 24. How often should hydrant inspections take place? (477)
- A. At least once a week
 - B. At least once a month
 - C. At least once a year
 - D. At least every five years
- _____ 25. What is used to indicate a hydrant's ownership and flow capacity? (477)
- A. Size
 - B. Paint
 - C. Design
 - D. Location

Objective 3:
Explain water supply testing.

- _____ 26. What is the purpose of a fire flow test? (479)
- A. To determine the way a fire moves through a building
 - B. To determine the rate of fire flow available for fire suppression
 - C. To determine how many hydrants are needed on a residential street
 - D. To determine the optimum time period for fire suppression at a specific location

- _____ 27. What information do calculations or graphical analyses from fire flow tests provide? (479)
- A. Quality of the water available
 - B. Which tools will be needed to access a hydrant
 - C. Amount of water flow from individual hydrants
 - D. Cost of the water distribution for specific hydrants

**Objective 4:
Explain fire hydrant inspections.**

- _____ 28. Which material(s) will be needed to complete the inspection of fire hydrants? (480)
- A. Control valve
 - B. Digital camera
 - C. Pitot tube and gauge
 - D. Hydrant hammer and valve key
- _____ 29. During hydrant inspections, inspectors need to verify that the clearance between the bottom of the discharge outlet and the grade is at least: (480)
- A. 15 inches (380 mm).
 - B. 25 inches (635 mm).
 - C. 35 inches (889 mm).
 - D. 45 inches (1 143 mm).

**Objective 5:
Describe how to use a pitot tube and gauge to take flow readings.**

- _____ 30. Before beginning a flow test, an inspector should verify that the air chamber on the pitot tube is: (481)
- A. drained.
 - B. full of air.
 - C. full of water.
 - D. completely closed.
- _____ 31. If the needle on the pressure gauge is fluctuating, read and record the value located: (482)
- A. at the lowest extreme.
 - B. at the highest extreme.
 - C. where the needle appears to stay the longest.
 - D. in the center between the high and low extremes.

- _____ 32. Unless some effort is made to steady the _____, the movement of the water will make an accurate reading difficult. (482)
- A. pitot tube
 - B. hydrant outlet
 - C. pressure gauge
 - D. static pressure valve

Objective 6:**Explain how to use flow test computations.**

- _____ 33. What is the easiest way to determine how much water is flowing from a hydrant outlet? (482)
- A. Review the historical documentation
 - B. Read the manufacturer documentation
 - C. Ask the municipal water department engineer
 - D. Refer to prepared tables for nozzle/outlet discharge
- _____ 34. What should inspectors refer to when trying to determine the coefficient of discharge for a specific nozzle? (482)
- A. Historical documentation
 - B. Manufacturer's recommendations
 - C. Information stamped on the nozzle itself
 - D. A ruler with a scale that measures at least 1/16th of an inch
- _____ 35. What size outlets should generally be used to conduct hydrant flow tests? (484)
- A. 2½-inch (65 mm)
 - B. 4-inch (100 mm)
 - C. 4½-inch (115 mm)
 - D. 6-inch (152 mm)
- _____ 36. Fire protection engineers have established _____ as the minimum required residual pressure when computing the available water for area flow-test results. (484)
- A. 10 psi (70 kPa)
 - B. 20 psi (140 kPa)
 - C. 40 psi (280 kPa)
 - D. 80 psi (560 kPa)

- _____ 37. Which type of hydrant should be located as close as possible to the location requiring flow test results? (485)
- A. Test hydrant
 - B. Flow hydrant
 - C. Dry-barrel hydrant
 - D. Wet-barrel hydrant
- _____ 38. In general, where should the test hydrant be located in relation to the flow hydrant when testing a single hydrant? (485)
- A. Before the flow hydrant
 - B. Behind the water supply source
 - C. Between the flow hydrant and the water supply source
 - D. Behind both the flow hydrant and the water supply source
- _____ 39. When testing multiple hydrants, where should the test hydrant be located? (485)
- A. Centrally located
 - B. Before the flow hydrants
 - C. After all the flow hydrants
 - D. Near the water supply source
- _____ 40. Before conducting a fire flow test, an inspector should notify: (487)
- A. the media.
 - B. the city council.
 - C. the police department.
 - D. a water department official.
- _____ 41. Which type of obstructions include growths, crusts, or rust on the inside walls of water mains? (489)
- A. Encrustations
 - B. Sedimentation deposits
 - C. Malfunctioning deposits
 - D. Foreign matter other than deposits
- _____ 42. Which of the following is the BEST way to locate partially closed valves before they pose a problem? (490)
- A. Routine testing
 - B. Sporadic testing
 - C. Use of digital cameras
 - D. Replace valves annually

- _____ 43. What are the two methods that can be used to compute fire flow test results? (490)
- A. Historical comparison
 - B. Jacobi Method and basic math
 - C. Physics and differential equations
 - D. Graphical analysis and mathematical method